

Third Grade Mathematics Indicators

Student's Name: _____

Teacher: _____

Number, Number Sense and Operations Standard

Number and Number System

- _____ 1. Identify and generate equivalent forms of whole numbers; e.g., 36, $30 + 6$, 9×4 , 46-10, number of inches in a yard.
- _____ 2. Use place value concepts to represent whole numbers and decimals using numerals, words, expanded notation and physical models.
Ex:
 - a) Recognize 100 means "10 tens" as well as a single entity (1 hundred) through physical models and trading games.
 - b) Describe the multiplicative nature of the number system; e.g., the structure of 3205 as 3×1000 plus 2×100 plus 5×1 .
 - c) Model the size of 1000 in multiple ways; e.g., packaging 1000 objects into 10 boxes of 100, modeling a meter with centimeter and decimeter strips, or gathering 1000 pop-can tabs.
 - d) Explain the concept of tenths and hundredths using physical models, such as metric pieces, base ten blocks, decimal squares or money.
- _____ 3. Use mathematical language and symbols to compare and order; e.g., less than, greater than, at most, at least, $<$, $>$, $=$, \leq , \geq .
- _____ 4. Count money and make change using coins and paper bills to ten dollars.
- _____ 5. Represent fractions and mixed numbers using words, numerals and physical models.
- _____ 6. Compare and order commonly used fractions and mixed numbers using number lines, models (such as fraction circles or bars), points of reference (such as more or less than $1/2$), and equivalent forms found using physical or visual models.
- _____ 7. Recognize and use decimal and fraction concepts and notations as related ways of representing parts of a whole or a set of; e.g., 3 of 10 marbles are red can also be described as $3/10$ and 3 tenths are red.

Meaning of Operations

- _____ 8. Model, represent and explain multiplication; e.g., repeated addition, skip counting, rectangular arrays and area model.
Ex:
 - a) Use conventional mathematical symbols to write equations for word problems involving multiplication.
 - b) Understand that, unlike addition and subtraction, the factors in multiplication and division may have different units; e.g., 3 boxes of 5 cookies each.
- _____ 9. Model, represent and explain division; e.g., sharing equally, repeated subtraction, rectangular arrays and area model.

Ex:

- a) Translate contextual situations involving division into conventional mathematical symbols.
- b) Explain how a remainder may impact an answer in a real-world situation; e.g., 14 cookies being shared by 4 children.

Number, Number Sense and Operations Standard

Meaning of Operations - Cont.

- _____ 10. Explain and use relationship between operations such as:
- a) Relate addition and subtraction as inverse operations;
 - b) Relate multiplication and division as inverse operations;
 - c) Relate addition to multiplication (repeated addition);
 - d) Relate subtraction to division (repeated subtraction).
- _____ 11. Model and use the commutative and associative properties for addition and multiplication.

Computation and Estimation

- _____ 12. Add and subtract whole numbers with and without regrouping.
- _____ 13. Demonstrate fluency in multiplication facts through 10 and corresponding division facts.
- _____ 14. Multiply and divide 2- and 3- digit numbers by a single-digit number, without remainders for division.
- _____ 15. Evaluate the reasonableness of computations based upon operations and the number involved; e.g., considering relative size, place value and estimated.

Measurement Standard

Measurement Units

- _____ 1. Identify and select appropriate units for measuring:
- a) length - miles, kilometers and other units of measure as appropriate;
 - b) volume (capacity) - gallons;
 - c) weight - ounces, pounds, grams, or kilograms;
 - d) temperature - degrees (Fahrenheit or Celsius).
- _____ 2. Establish personal or common referents to include additional units; e.g., a gallon container of milk; a postage stamp is about a square inch.
- _____ 3. Tell time to the nearest minute and find elapsed time using a calendar or a clock.
- _____ 4. Read thermometers in both Fahrenheit and Celsius scales.

Use Measurement Techniques and Tools

- _____ 5. Estimate and measure length, weight and volume (capacity), using metric and U.S. customary units, accurate to the nearest

1/2 or 1/4 unit as appropriate.

- _____ 6. Use appropriate measurement tools and techniques to construct a figure or approximate an amount of specified length, weight or volume (capacity); e.g., construct a rectangle with length $2\frac{1}{2}$ inches and width 3 inches, fill a measuring cup to the $\frac{3}{4}$ cup mark.
- _____ 7. Make estimated for perimeters, area and volume using links, tiles, cubes and other models.

Geometry and Spatial Sense Standard

Characteristics and Properties

- _____ 1. Analyze and describe properties of two-dimensional shapes and three-dimensional objects using terms such as vertex, edge, angle, side and face,
- _____ 2. Identify and describe the relative size of angles with respect to right angles as follows:
- Use physical models, like straws, to make different sized angles by opening and closing the sides, not by changing the side lengths.
 - Identify, classify and draw right, acute, obtuse and straight angles.

Spatial Relationships

- _____ 3. Find and name locations on a labeled grid or coordinate system; e.g., a map or graph.

Transformations and Symmetry

- _____ 4. Draw lines of symmetry to verify symmetrical two-dimensional shapes.

Visualization and Geometric Models

- _____ 5. Build a three-dimensional model of an object composed of cubes; e.g., construct a model based on an illustration or actual object.

Patterns, Functions and Algebra Standard

Use Patterns, Relations and Functions

- _____ 1. Extend multiplicative and growing patterns, and describe the pattern or rule in words.
- _____ 2. Analyze and replicate arithmetic sequences with and without a calculator.
- _____ 3. Use patterns to make predictions, identify relationships, and solve problems.

Use Algebraic Representations

- _____ 4. Model problem situations using objects, pictures, tables, numbers, letters and other symbols.
- _____ 5. Write, solve and explain simple mathematical statements, such as $7 + \quad > 8$ or $\quad = 8 = 10$.
- _____ 6. Express mathematical relationships as questions and inequalities.

Analyze Changes

- _____ 7. Create tables to record, organize and analyze data to discover patterns and rules.
- _____ 8. Identify and describe quantitative changes, especially those involving addition and subtraction; e.g., the height of water in a glass becoming 1 centimeter lower each week due to evaporation.

Data Analysis and Probability Standard

Data Collection

- _____ 1. Collect and organize data from an experiment, such as recording and classifying observations or measurements in response to a question posed.
- _____ 2. Draw and interpret picture graphs in which a symbol or picture represents more than one object.
- _____ 3. Read, interpret and construct bar graphs with intervals greater than one.
- _____ 4. Support a conclusion or prediction orally and in writing, using information in a table or graph.
- _____ 5. Match a set of data with graphical representation of the data.
- _____ 6. Translate information freely among charts, tables, line plots, picture graphs and bar graphs; e.g., create a bar graph from the information in a chart.
- _____ 7. Analyze and interpret information represented on a timeline.

Statistical Methods

- _____ 8. Identify the mode of a data set and describe the information it gives about a data set.

Probability

- _____ 9. Conduct a simple experiment or simulation of a simple event, record the results in a chart, table or graph, and use the results to draw conclusions about the likelihood of possible outcomes.
- _____ 10. Use physical models, pictures, diagrams and lists to solve problems involving possible arrangements or combinations of two to four objects

